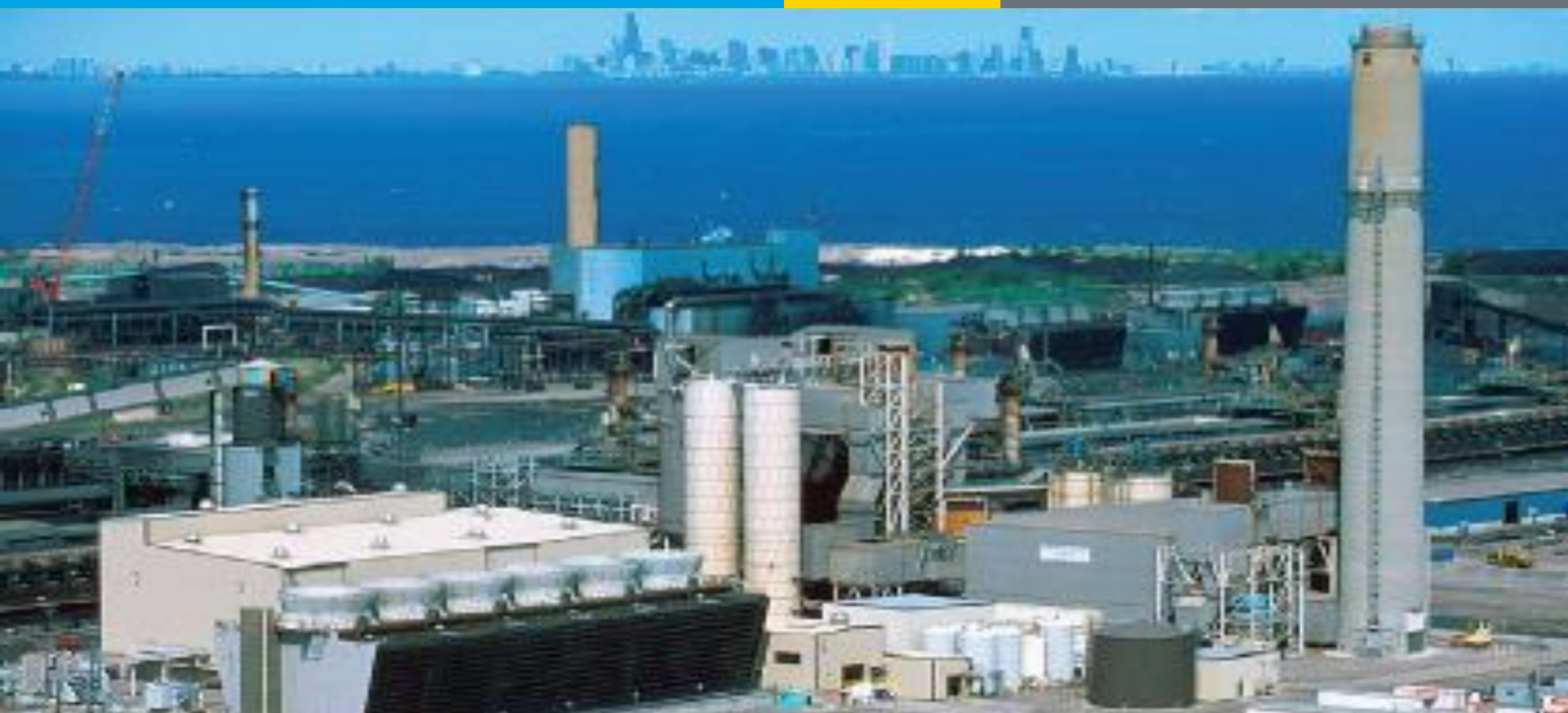


DOE CHP Actions and Programs

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Dave Sjoding
NW CEAC

**Montana Energy Education
Workshop**

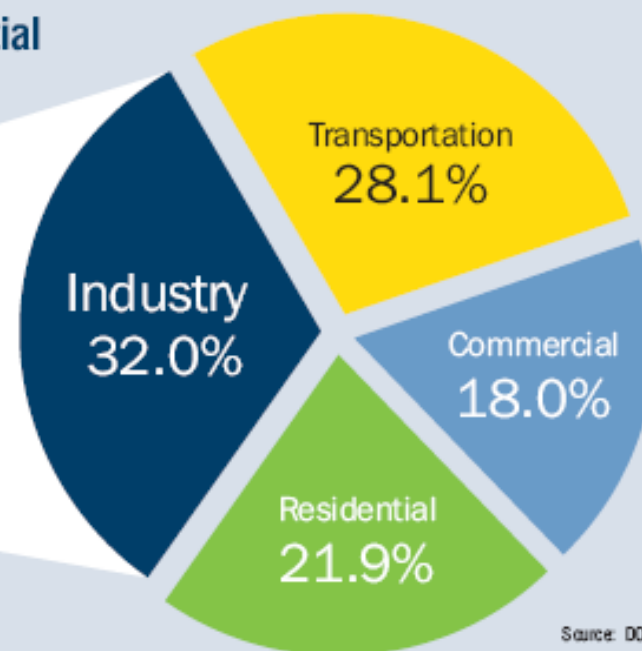
July 14, 2010

Mission: Improve national energy security, climate, environment, and economic competitiveness by transforming the way U.S. industry uses energy.

Reducing U.S. industrial energy intensity is essential to achieving national energy and carbon goals

Petroleum	38.1%
Natural Gas	33.3%
Electricity*	13.5%
Coal and Coke	8.5%
Renewable Energy	6.6%

* Excludes losses

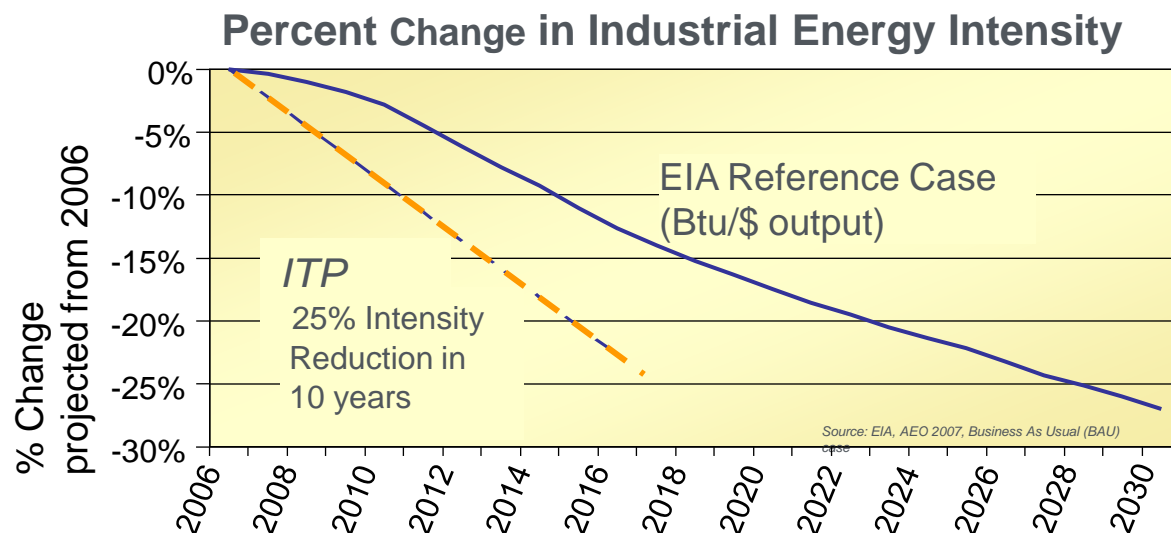


Source: DOE Energy Information Administration, 2006.

2

ITP Strategic Objectives

- Reduce industrial energy intensity by 25% in 10 years
- Establish the U.S. as the Global Leader in Energy Management



Energy Efficiency R&D

Develop cross-cutting technologies that address the top energy savings opportunities across industry



**Save
ENERGY
Now**



Technology Delivery

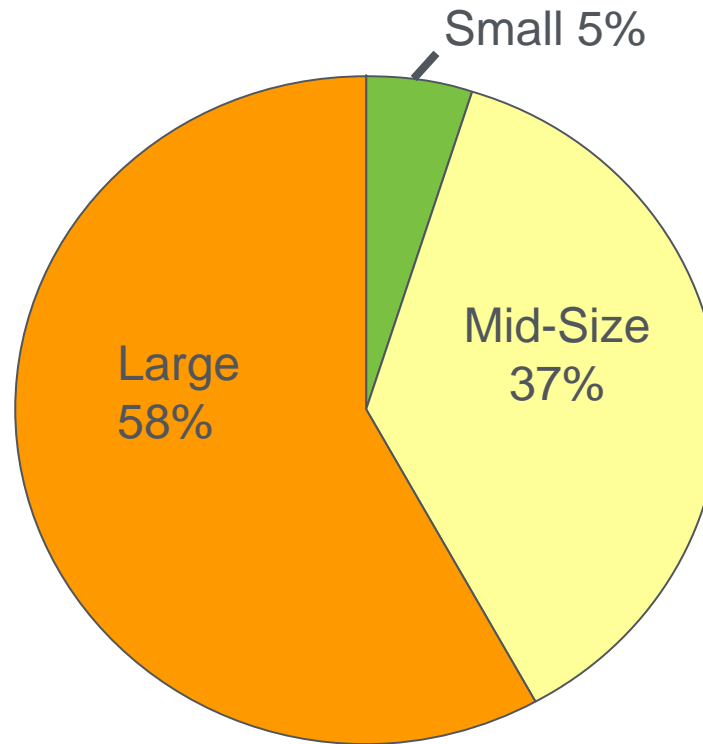
Help plants save energy today by assessing opportunities and facilitating adoption of best energy management practices and efficient new technologies

ITP Save Energy Now Assessments

*4,014 large plants use
58% of the energy*

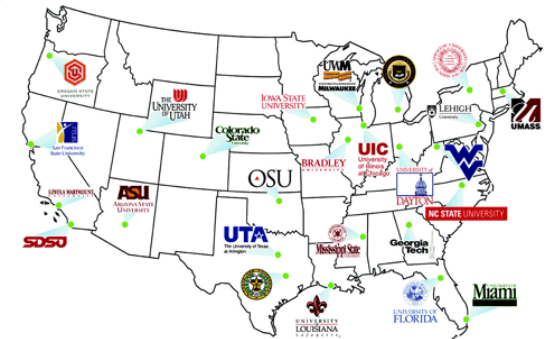
*Energy Saving
Assessments (System
focused)*

**Save
ENERGY
Now**



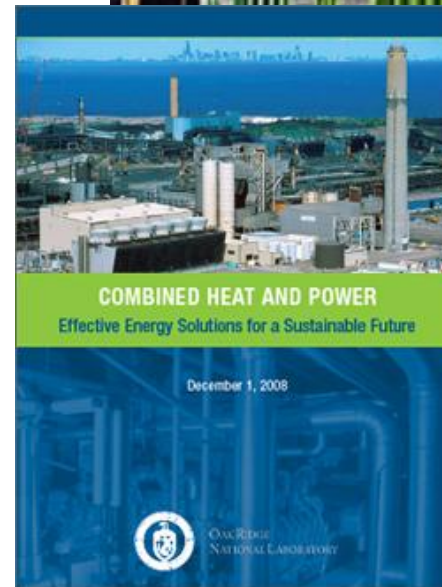
*Industrial Assessment
Centers (IAC)*

*Cross-Cutting Energy
Assessments*



Total Plants Assessed:	2,098
Identified Cost Savings:	\$1.2 billion
Identified Energy Savings:	134 trillion Btu (NG)
Identified CO ₂ Savings:	10.5 million MT

- CHP is recognized as the best means to *simultaneously*
 - Reduce GHG emissions
 - Promote use of secure domestic and renewable energy sources
 - Reduce exposure to energy price hikes and volatility
- ITP activities include
 - Facilitating deployment and addressing barriers
 - Serving as an independent, credible voice on applications and benefits
 - Conducting R&D to improve efficiency, lower costs, and extend applications

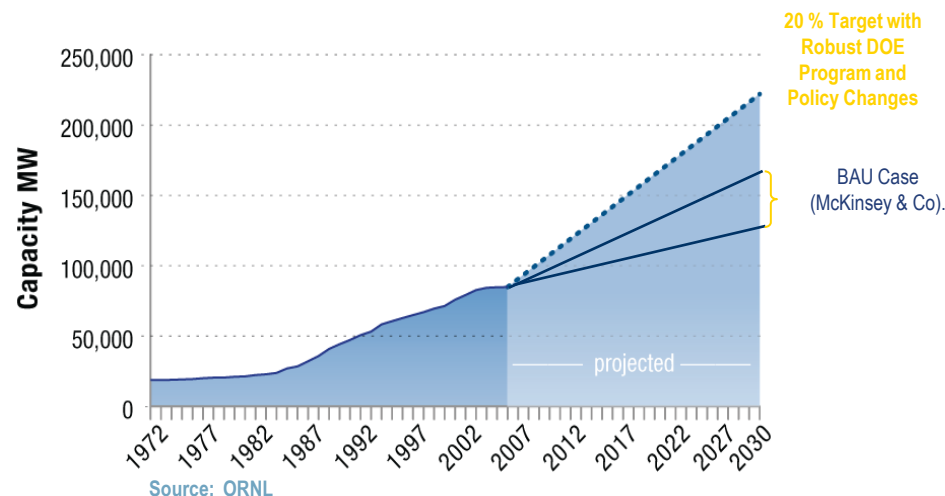


CHP offers a sizable near-term option for large energy efficiency improvements and CO₂ reduction

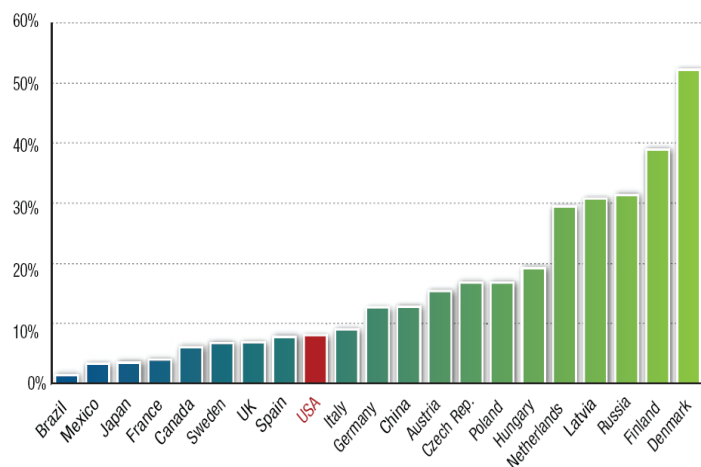
Source: EPA 5

CHP - 20% of US Generating Capacity in 2030

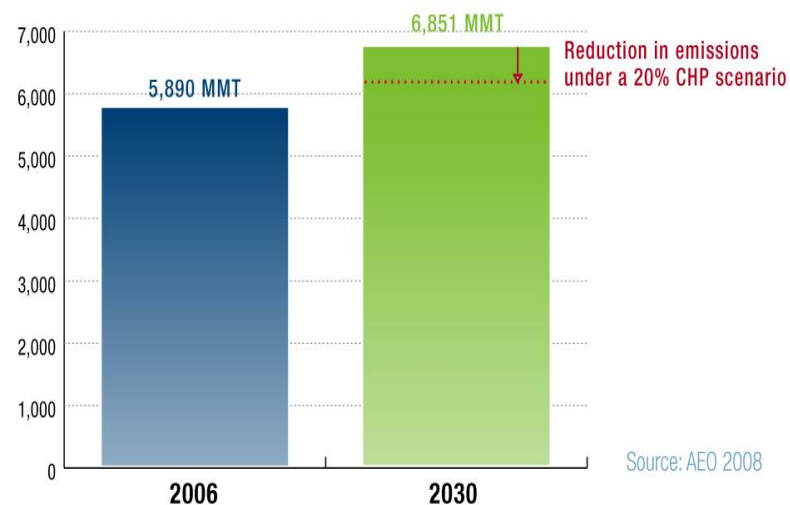
CHP	2006	2030 Target
Total Electricity Generating Capacity	85 GW (9% of current capacity)	240.9 GW (20% of projected capacity)
Annual Energy Savings	1.9 Quads	5.3 Quads
Annual CO ₂ Reduction	248 MMT	848 MMT
Number of Car Equivalents Taken Off Road	45 million	154 million



CHP in a Global Context – 20% Capacity Goal is Reachable



Carbon Dioxide Emissions 2006 and 2030 (MMT)



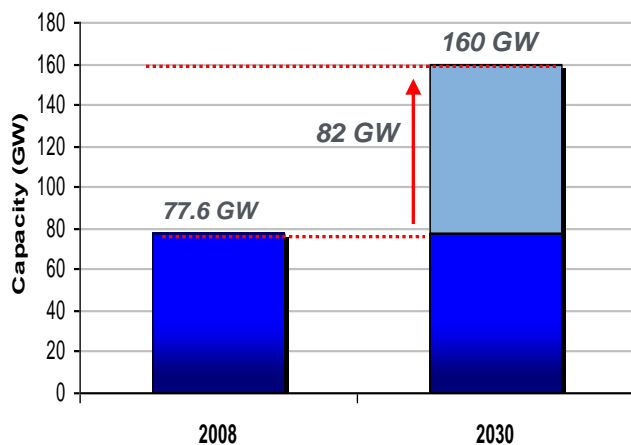
2030 Goal: Aggressive Growth in All Markets

Large CHP >20 MW

Existing Industrial Market

- Improved performance
- Utilize new fuels and waste streams
- Overcome external barriers

Over 1,600 new systems

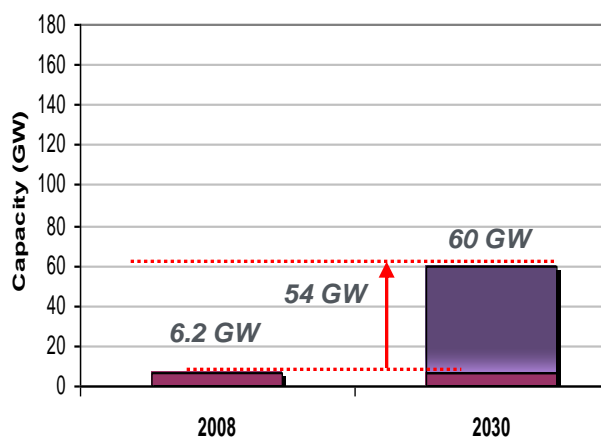


Mid CHP 1 MW to 20 MW

Fast-Growth Market

- Technology for new applications
- Packaged systems
- Demonstrations to make the business case

Over 10,000 new systems

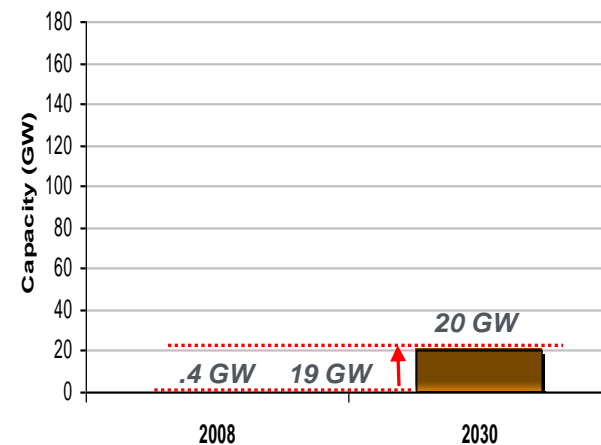


Small CHP <1 MW

Emerging Market

- New systems and technologies
- Smart Grid and 'green' consumers
- Build distribution network

Over 50,000 new systems



Market sectors include CHP, District Energy, and Waste Energy Recovery applications

Three Key Investment Areas

1. Technology Research and Development

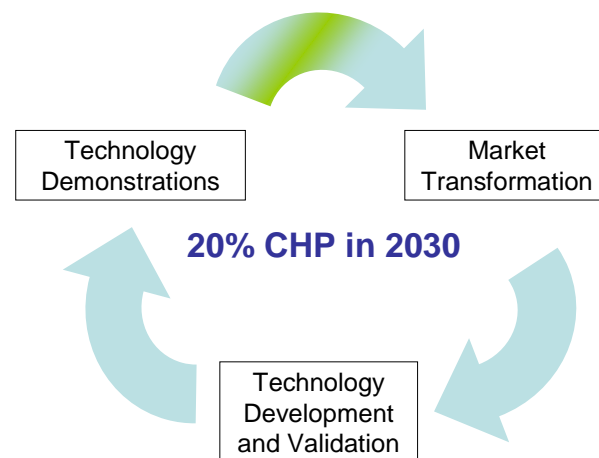
- *Alternative fuels and low-value waste heat*
- *Maximize utilization of waste streams in large industrial sector*
- *Small and mid-size systems for new markets*
- *Improve technical performance of CHP*
 - *Operating costs and installed costs*
 - *Efficiency*
 - *Reliability*
 - *Compliance with Emissions Regulations*

2. Technology Demonstrations

- *Innovative market applications*
- *Project development best practices*
- *Value to users, utilities and public*
- *Quantify CO2 reductions and energy savings*
- *Reduce technical risk*
- *Showcase systems*

3. Market Transformation

- *Targeted End-User Education and Outreach*
- *Coordination with Utilities on Technical and Regulatory Issues*
- *Regulatory/Policy Supportive Information and Analysis*
- *Accelerate the CHP Investment Decisions*
- *Demonstrate Role in GHG Reduction*



*Accelerate the project
develop/investment decision process
and broaden range of users*

*RACs lead DOE's CHP
outreach efforts and
establish DOE RAC
brand through
coordinated planning
and execution of
regional specific
activities*

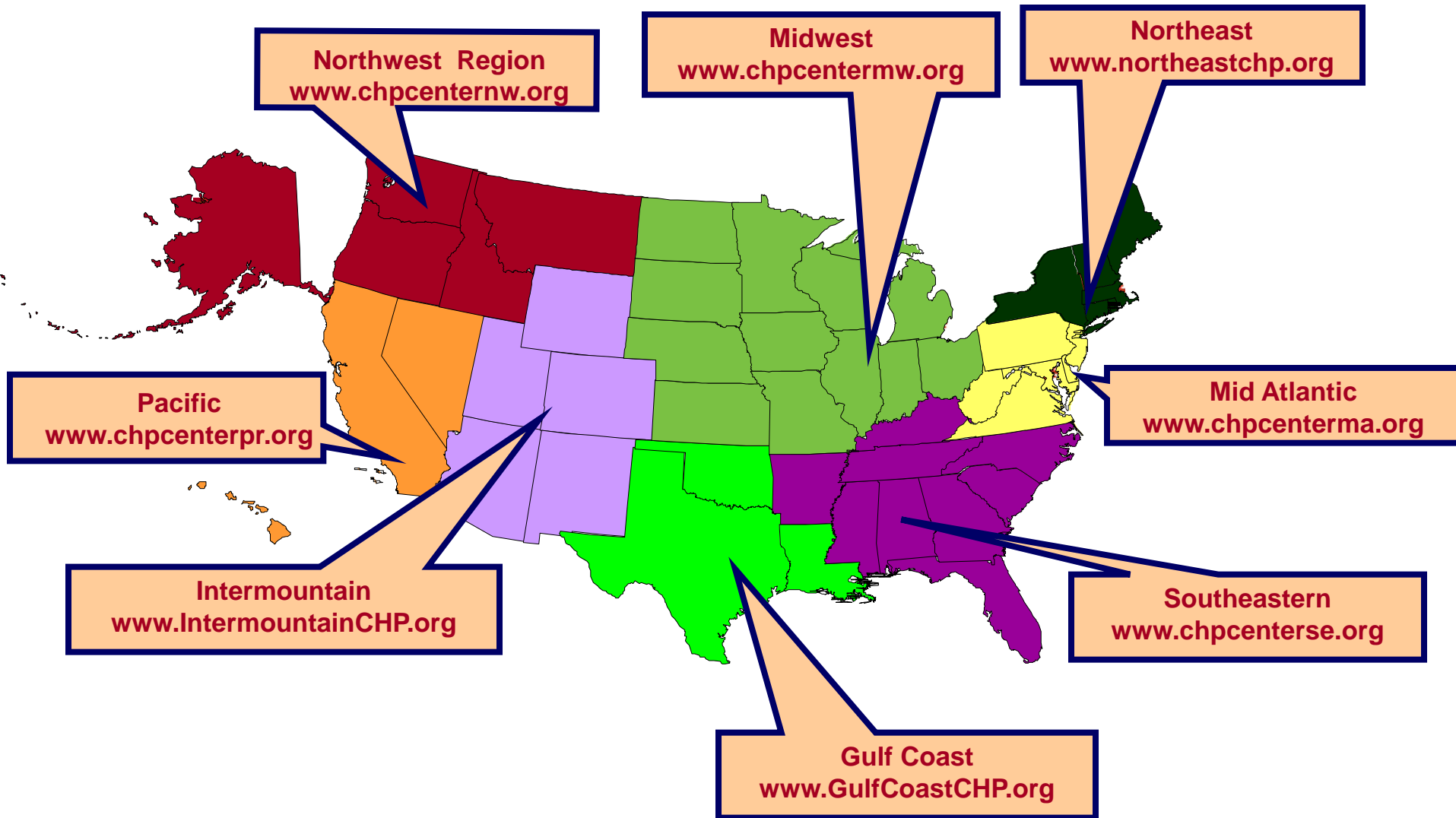
US DOE's Regional Centers to Lead Deployment and Market Transformation of CHP by

- Educating regional players on benefits to reduce perceived risk
 - End-Users
 - Policy Makers
- Providing project specific support
- Providing feedback to DOE and industry regarding future R&D program needs

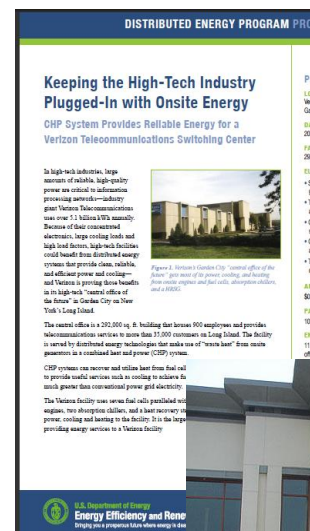
US DOE Clean Energy Application Centers

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



- State Energy Efficiency Action Network
 - Industrial Efficiency & CHP Work Group
 - Best Practices
 - Very results focused
 - Deploy state/utility program and policy models
 - An emerging effort



Montana observations

Focused industrial efficiency attention needed

- Certified Industrial Energy Efficiency Specialists are lacking – Steam, process heating, pumping systems, compressed air, fans, and CHP expertise – A Northwest collaboration – See

http://chpcenternw.org/NwChpDocs/Industrial_Energy_Efficiency_and_CHP_Qualified_Specialists.pdf

- Full plant-wide energy audits are key to funding next steps

Alaska • Idaho • Montana • Oregon • Washington



U.S. DEPARTMENT OF ENERGY
Northwest Clean Energy Application Center